

## **TRASHCAN DOOR ACTUATION SYSTEM**

### **TECHNICAL FIELD**

The invention relates to trashcans.

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### **STATEMENT OF A PROBLEM ADDRESSED BY THIS INVENTION**

#### *Interpretation Considerations*

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This section describes the technical field in more detail, and discusses problems encountered in the technical field. This section does not describe prior art as defined for purposes of anticipation or obviousness under 35 U.S.C. section 102 or 35 U.S.C. section 103. Thus, nothing stated in the Statement of a Problem Addressed by This Invention is to be construed as prior art.

#### *Discussion*

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Trashcans (also known as waste receptacles and by many other names) are used practically everywhere to facilitate waste disposal. However, particularly in fast-food restaurant trashcans, an accumulation of biological waste matter on a trashcan door (or lid) can create a biohazard from which diseases may spread. Accordingly, there is a need for inventive systems and devices that enable a trashcan user to throw items away while minimizing contact with a contaminated trashcan door surface. The present invention provides such a system and device.

**BRIEF DESCRIPTION OF THE DRAWINGS**

Various aspects of the invention, as well as at least one embodiment, are better understood by reference to the following **EXEMPLARY EMBODIMENT OF A BEST MODE**. To better understand the invention, the **EXEMPLARY EMBODIMENT OF A BEST MODE** should be read in conjunction with the drawings in which:

Figure 1 shows an inventive trashcan door system (the door system);

Figure 2 illustrates an inventive trashcan door handle;

Figure 3 is a second view of the trashcan door handle; and

Figure 4 is a third view of the trashcan door handle from which angles theta and beta are more clearly shown.

AN EXEMPLARY EMBODIMENT OF A BEST MODE

*Interpretation Considerations*

When reading this section (An Exemplary Embodiment of a Best Mode, which describes an exemplary embodiment of the best mode of the invention, hereinafter “exemplary embodiment”), one should keep in mind several points. First, the following exemplary embodiment is what the inventor believes to be the best mode for practicing the invention at the time this patent was filed. Thus, since one of ordinary skill in the art may recognize from the following exemplary embodiment that substantially equivalent structures or substantially equivalent acts may be used to achieve the same results in exactly the same way, or to achieve the same results in a not dissimilar way, the following exemplary embodiment should not be interpreted as limiting the invention to one embodiment.

Likewise, individual aspects (sometimes called species) of the invention are provided as examples, and, accordingly, one of ordinary skill in the art may recognize from a following exemplary structure (or a following exemplary act) that a substantially equivalent structure or substantially equivalent act may be used to either achieve the same results in substantially the same way, or to achieve the same results in a not dissimilar way.

Accordingly, the discussion of a species (or a specific item) invokes the genus (the class of items) to which that species belongs as well as related species in that genus. Likewise, the recitation of a genus invokes the species known in the art. Furthermore, it is recognized that as technology develops, a number of additional alternatives to achieve an aspect of the invention may arise. Such advances are hereby incorporated within their respective genus, and should be recognized as being functionally equivalent or structurally equivalent to the aspect shown or described.

Second, the only essential aspects of the invention are identified by the claims. Thus, aspects of the invention, including elements, acts, functions, and relationships (shown or described) should not be interpreted as being essential unless they are explicitly described and identified as being essential. Third, a function or an act should be interpreted as incorporating all modes of doing that function or act, unless otherwise explicitly stated (for example, one recognizes that “tacking” may be done by nailing, stapling, gluing, hot gunning, riveting, etc., and so a use of the word tacking invokes stapling, gluing, etc., and all other modes of that word and similar words, such as “attaching”).

Fourth, unless explicitly stated otherwise, conjunctive words (such as “or”, “and”, “including”, or “comprising” for example) should be interpreted in the

inclusive, not the exclusive, sense. Fifth, the words “means” and “step” are provided to facilitate the reader’s understanding of the invention and do not mean “means” or “step” as defined in §112, paragraph 6 of 35 U.S.C., unless used as “means for –functioning–” or “step for –functioning–” in the Claims section. Sixth, the invention is also described in view of the *Festo* decisions, and, in that regard, the claims and the invention incorporate equivalents known, foreseeable, and unforeseeable. Seventh, the language and each word used in the invention should be given the ordinary interpretation of the language and the word, unless indicated otherwise.

#### *Discussion of the Figures*

The invention can be generally characterized as a system that allows a user of a trashcan to throw away items while minimizing contact with a contaminated surface of a trashcan. The invention has particular application to indoor-use or park-sized trashcans found in homes and restaurants, rather than industrial or business sized waste dumpsters. In one preferred embodiment, the invention provides a retroactively attachable handle that is adapted to couple to an outer surface of a trashcan door so that the trashcan door may be opened by a user without actually touching the trashcan door surface. In an alternative embodiment, an inventive handle is pre-attached to a trashcan door, coupled to the

outer surface, so that a user can open the trashcan door without touching the trashcan door.

Features and advantages of the invention can be better understood by reviewing the figures, where Figure 1 shows an inventive trashcan system (the system) 100. The trashcan described herein is easily recognizable as a trashcan typically found in any fast-food establishment, where a trashcan door 120 is typically a vertically affixed (which may be spring-loaded), generally flat, rectangular structure and is coupled to a trashcan hood 110 via at least one hinge (not shown). The trashcan door 120 also preferably “hangs” vertically so that it may “swing” through an opening 130 in the hood 110. The trashcan door 120 is also preferably smaller than 24 inches horizontal by 18 inches vertical, and weighs less than 25 pounds. Of course, the invention is not limited to the best mode lid 120 or hood 110 shown herein, but also encompasses the many lids and hoods known to those of skill in the trashcan art.

The system 100 also comprises a trashcan body 112 upon which the trashcan hood 110 sits or is otherwise affixed, as well as a trashcan door handle 122 coupled to the trashcan door 120. Preferably, the trashcan handle 122 is coupled to the trashcan door 120 as a separate unit. However, in one embodiment, the trashcan door 120 and the handle 122 define two parts of a

single piece of material. The handle 122 preferably attaches to the exterior surface of the trashcan door 120, and typically attaches to the door 120 such that the door 120 will open when the handle 122 is pulled. Thus, by pulling on the handle 122, which is located on the door such that a short travel of the handle can completely open the door 120, one may open the door 120. Though described in greater detail below, the handle 122 preferably extends vertically upward, but may also extend downward or in other directions desired by a user, and which may vary based on a specific application. When extending vertically upward, as shown in figure 1, it is desired that approximately a 25-degree angle be formed between the back of the handle 216 and the trashcan door (or a tangential plane to the trashcan door being located at approximately the handle's position). However, the handle may extend at other angles, and may, in one embodiment, be curved.

The trashcan door handle 200 is described in more detail in Figure 2 and Figure 3, which are referred to simultaneously, where Figure 2 illustrates an inventive trashcan door handle, and Figure 3 is a second view of the trashcan door handle from which one may more easily see various features of the invention. The trashcan door handle 200 generally comprises a grip and lever portion 220, and a trashcan door portion 210 coupled to the grip and lever portion 220 (though

it need not perform a lever function). Preferably, grip and lever portion 220 and the trashcan door portion 210 define two parts of a single piece of material.

The trashcan door portion 210 is adapted to couple to a trashcan door such as the door 120 of Figure 1. Adaptation may encompass a generally flat surface 214, or a surface 214 that is the “negative” of a door, such that the surface of the door portion 210 may securely mate with a trashcan door that is not flat. In addition, the trashcan door portion may be inclined or angled relative to the handle to achieve a desired pitch that facilitates grasping, securing or movement of a trashcan door. In one embodiment, the surface 214 is adapted to orient the handle 200 upward when coupled to a trashcan door, preferably forming an approximately twenty-five degree angle between the back 216 of the grip and lever portion 220 and the plane of a trashcan door or its tangential plane if the door is substantially curved (shown as  $\theta$ ), while in another embodiment the surface 214 is adapted to be oriented downward, and may extend upward or downward beyond a trashcan door. The trashcan door portion is adapted to couple to a trashcan door such that the handle, when pulled, pulls the trashcan door outwardly open.

In one embodiment, the trashcan door portion 210 is adapted to couple to a trashcan door via screws that are passed through screw holes 212. The trashcan



door portion 210 may also be adapted to couple to a trashcan door via an adhesive. Other means of coupling the handle 200 to a trashcan door include epoxy, sticky-pads, or tape applied to the trashcan door portion. Of course, other means of coupling a handle 200 to a trashcan door will be apparent upon reading the present disclosure, and such means are incorporated within the scope of the invention.

Figure 4 is a third view of the trashcan door handle from which angles theta and beta are more clearly shown. The handle and the trashcan door may form a number of preferred degrees, and in one embodiment preferably form an approximately twenty-five degree angle between the back 216 of the grip and lever portion 220 and the trashcan door surface, or the trashcan door's tangential plane if the door is substantially curved (shown as theta). In addition, in one alternative embodiment, the trashcan door handle and the trashcan door preferably form an approximately twenty-three degree angle between the front 222 of the grip and lever portion 220 and the trashcan door surface, or the trashcan door's tangential plane approximately located at the handle's position, if the door is substantially curved (shown as beta). Assuming the trashcan door is a flat surface, the base 214 of the trashcan door handle may co-define a plane with the trashcan door (as shown in Figure 4). Of course, other preferred angles of beta

and theta are, upon reading this disclosure, apparent to those of ordinary skill in the art.

Of course, other features and embodiments of the invention will be  
5 apparent to those of ordinary skill in the art. After reading the specification, and the detailed description of the exemplary embodiment, these persons will recognize that similar results can be achieved in not dissimilar ways. Accordingly, the detailed description is provided as an example of the best mode of the invention, and it should be understood that the invention is not limited by  
10 the detailed description. Further, it should be understood that the elements of the window system are not limited to the solely described elements, but rather incorporate any functional equivalents. Accordingly, the invention should be read as being limited only by the claims. Thus, though the invention has been described with respect to a specific preferred embodiment, many variations and  
15 modifications will become apparent to those skilled in the art upon reading the present application. It is therefore the intention that the appended claims be interpreted as broadly as possible in view of the prior art to include all such variations and modifications.